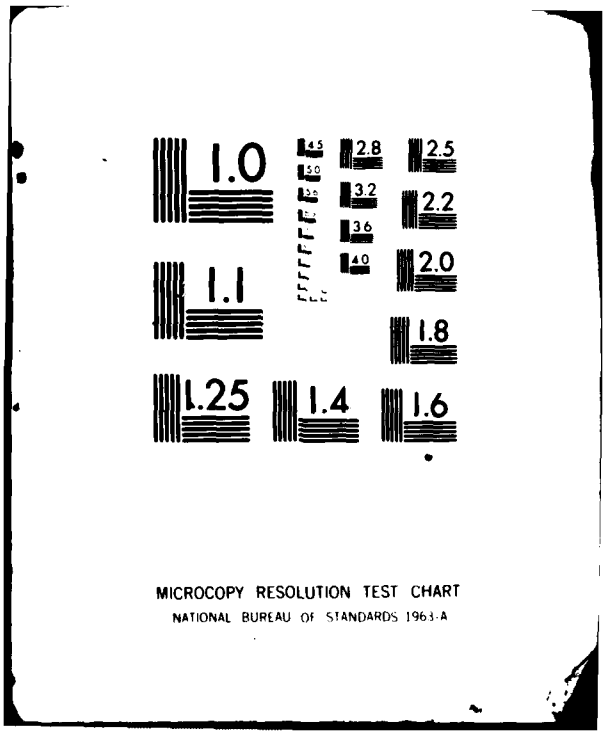
AD-A111 409 FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH F/G 13/8
METHOD OF MANUFACTURING OPTICAL SURFACES OF REVOLUTION,(U)
FEB 82 V V GORELIK, S I DENISOV
UNCLASSIFIED FTD-ID(RS)T-1731-81 NL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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

FTD-ID(RS)T-1731-81

FOREIGN TECHNOLOGY DIVISION

METHOD OF MANUFACTURING OPTICAL SURFACES OF REVOLUTION

by

V.V. Gorelik and S.I. Denisov

Approved for public release;
distribution unlimited.

EDITED TRANSLATION

FTD-ID(RS)T-1731-81 3 February 1982

MICROFICHE NR: FTD-82-C-000147

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By: V.V. Gorelik and S.I. Denisov

English pages: 3

Source: USSR Patent Nr. 315569, 1 October 1971, pp. 1-2

Country of origin: USSR
Translated by: Carol S. Nack
Requester: USAMICOM
Approved for public release; distribution unlimited.

U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

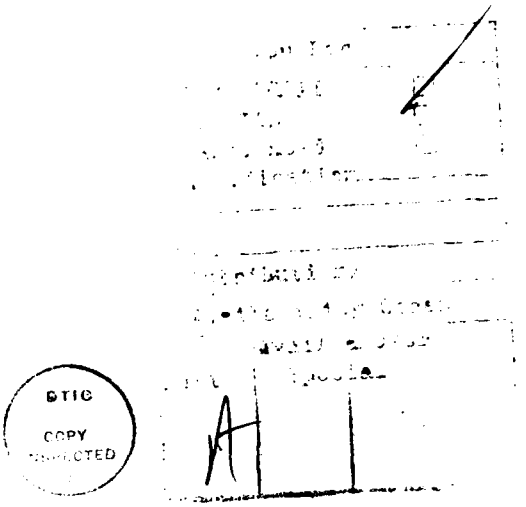
Block	Italic	Transliteration	Block	Italic	Transliteratio..
А а	*А а*	A, a	Р р	*Р р*	R, r
Б б	*Б б*	B, b	С с	*С с*	S, s
В в	*В в*	V, v	Т т	*Т т*	T, t
Г г	*Г г*	G, g	У у	*У у*	U, u
Д д	*Д д*	D, d	Ф ф	*Ф ф*	F, f
Е е	*Е е*	Ye, ye; E, e*	Х х	*Х х*	Kh, kh
Ж ж	*Ж ж*	Zh, zh	Ц ц	*Ц ц*	Ts, ts
З з	*З з*	Z, z	Ч ч	*Ч ч*	Ch, ch
И и	*И и*	I, i	Ш ш	*Ш ш*	Sh, sh
Й й	*Й й*	Y, y	Щ щ	*Щ щ*	Shch, shch
К к	*К к*	K, k	Ъ ъ	*Ъ ъ*	"
Л л	*Л л*	L, l	Ы ы	*Ы ы*	Y, y
М м	*М м*	M, m	Ь ь	*Ь ь*	'
Н н	*Н н*	N, n	Э э	*Э э*	E, e
О о	*О о*	O, o	Ю ю	*Ю ю*	Yu, yu
П п	*П п*	P, p	Я я	*Я я*	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere.
When written as ё in Russian, transliterate as yё or ё.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	$\sinh^{-1}$
cos	cos	ch	cosh	arc ch	$\cosh^{-1}$
tg	tan	th	tanh	arc th	$\tanh^{-1}$
ctg	cot	cth	coth	arc cth	$\coth^{-1}$
sec	sec	sch	sech	arc sch	sech^{-1}
cosec	csc	csch	csch	arc csch	csch^{-1}

Russian	English
rot	curl
lg	log



METHOD OF MANUFACTURING OPTICAL SURFACES OF REVOLUTION

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This invention is in the area of the technology of manufacturing optical parts with a second-order surface of revolution.

We know of a method of manufacturing second-order optical surfaces of revolution by grinding and polishing the blank using a tubular tool with a scarf. The main drawback of this method of manufacture is the immobility of the working edge of the tubular tool.

In order to increase the precision of machining and work productivity, the blank is machined on an elliptical trajectory.

The figure shows a tool for carrying out this method.

The blank 1 is fastened on chuck 2 so that its axis coincides with the axis of rotation of spindle 3. The tool 4 is mounted on lever 5 of the machine tool and fastened in the initial position for machining the surface. Then the dogs 6 with the working parts 7 of tool 4 attached to them are abutted against the surface of blank 1 being machined. In order to obtain different types of surfaces, the calibration plate 8 of the tool is inclined at the necessary angle to its axis, thereby assigning the required slope of the "scarf" over which the working parts 7 come into contact with the surface being machined.

Metal working parts are used for grinding, while either a layer of resin is applied to the working edge, or else felt is attached.

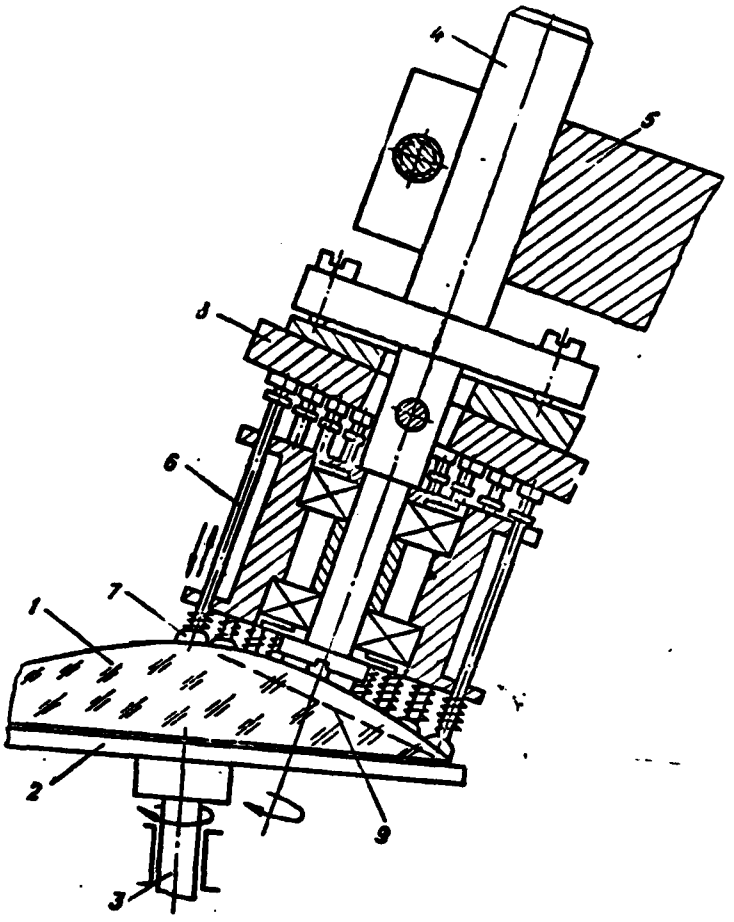

Figure.

Machining is done with an abrasive, and the working parts of the tool are moved over the surface being machined on an elliptical trajectory 9, while the dogs which hold the working parts simultaneously convey backward-forward motion along the axis of the tool, i.e., along the forming cylinder (wall) of the tubular tool. This is accomplished by transferring the rotation from the blank to the tool through the contact of the working parts with the surface being machined and by the interaction of the dogs with the calibration surface, as well as by the interaction of the dogs with the calibration plate with which the forming process is carried out. The

rotational motion of the tool can be conveyed from the drive.

Subject of Invention

This invention is a method of manufacturing optical surfaces of revolution, primarily of second order, by grinding and polishing the blank with a tubular tool with a scarf. It is different because in order to increase the precision of machining and work productivity, the blank is machined on an elliptical trajectory.


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